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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
WANG, QUAN ZHEN	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/073,974	SETO ET AL.	
	Examiner	Art Unit	
	Quan-Zhen Wang	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-2 and 4-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-2, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swaminathan et al. (U.S. Patent US 5,717,712) in view of So et al. (U.S. Patent US 5,179,420).

Regarding claim 1, Swaminathan discloses a light transmitter (fig. 3, 300) comprising a packaged laser diode (fig. 3, element 320) having a first thermal contacting portion which can come in thermal contact with an external device (column 3, lines 52-54), and an exothermic-effect-only heat source (fig. 3, heat exchange element 350) provided on the first thermal contacting portion (column 3, lines 52-54) and having a second thermal contacting portion capable of coming in thermal contact with the external device (fig. 3, element 340) (see, column 3, lines 52-54). The system of Swaminathan differs from the claimed invention in that Swamionathan does not specifically teach that a wavelength of light oscillated (tuned) by the laser diode is controlled by heat radiated from the exothermic-effect-only heat source. However, it is well known in the art the wavelength of light of a laser diode can be controlled (tuned) by controlling the temperature of the laser, and is it well known to configure the heat

source attach to a laser diode to tune the wavelength of the laser. For example, So discloses that a laser device (fig. 4) with a thermo-electric cooler for maintaining constant temperature (column 5, lines 31-44), but the thermo-electric cooler for maintaining constant temperature can be used to control (tune) the wavelength of the laser device (column 5, lines 45-58). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to control (tune) the wavelength of the laser by controlling the heat radiated from the exothermic-effect-only heat source, as it is taught by So, in the system of Swaminathan in order to reduce additional noise associated with wavelength tuning.

Regarding claim 2, Swaminathan further teaches a heat detector (fig. 3, element 381) provided on the first thermal contacting portion (column 3, lines 59-62).

Regarding claim 4, the modified system of Swaminathan and So further teaches that the light transmitter according to claim 2, wherein a wavelength of light oscillated from said laser diode is controlled (tuned) by heat radiated by the extothermic-effect-only heat source.

2. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swaminathan et al. (U.S. Patent US 5,717,712) So et al. (U.S. Patent US 5,179,420) and further in view of Plizak et al. (U.S. Patent US 3,725,566).

Regarding claims 5-6, the modified system of Swaminathan and So differs from the claimed invention in that Swamionathan and So do not specifically teach that the exothermic-effect-only heat source is a transistor. However, it is well known in the art

that a transistor can be used for the heat source because of the availability and low cost. For example, Plizak teaches that a heat source is a transistor (column 4, lines 45-46). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to use a transistor as the exothermic-effect-only heat source in the modified system of Swaminathan and So in order to reduce the cost of the laser system.

3. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swaminathan et al. (U.S. Patent US 5,717,712) in view of So et al. (U.S. Patent US 5,179,420) and further in view of Ziari et al. (U.S. Patent US 6,215,809 B1).

Regarding claims 7-10, the modified system of Swaminathan and So differs from the claimed invention in that Swamionathan and So do not specifically teach that the package of the laser diode is a coaxial type package or a Mini-DIL type package. However, it is well known in the art to package a laser using a coaxial type package or a Mini-DIL type package because of the simplicity and low cost because these types of laser packaging is industry-standard. For example, Ziari discloses that a coaxial type package or a Mini-DIL type package is industry-standard type of package (column 1, lines 37-42). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to use a coaxial type packaged laser or a Mini-DIL type package in the modified system of Swaminathan and So in order to simplify the laser packaging process and reduce the cost of the system.

4. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tarusawa et al. (U.S. Patent US 5,812,296) in view of Swaminathan et al. (U.S. Patent US 5,717,712) and So et al. (U.S. Patent US 5,179,420).

Regarding claim 11, Tarusawa discloses a light transfer system comprising: a plurality of slave stations (fig. 4, 200-1 to 200-N), each of which is equipped with a light transmitter (fig. 4, 25) which outputs an optical signal corresponding to an information signal, each of the plurality of slave stations including a wavelength controller (fig. 4, 33) which controls s wavelength of the optical signal output from the laser diode; and a master station which receives (fig. 4, 11) an optical multiplexed signals obtained by optically multiplexing the optical signals (fig. 4, 300U) from the plurality of slave stations. Tarusawa differs from the claimed invention in that Tarusawa does not specifically teach that the wavelength of the light transmitter is controlled by adjusting an amount of heat radiated from an exothermic-effect-only heat source. However, Swaminathan and So disclose a light transmitter with the output wavelength controlled by adjusting the heat radiated from the exothermic-effect-only heat source, as discussed above for claims 1-4. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a tunable laser, such as the one taught by Swaminathan and So, into the system taught by Tarusawa in order to reduce additional noise associated with wavelength tuning.

Regarding claim 12, Tarusawa further teaches that the master station is equipped with a detector which detects optical beat noise (column 2, lines 62-67); the master station outputs a wavelength control signal (fig. 4, MR) to control the wavelength

of the laser diode of the light transmitter; and the wavelength controller of each of the plurality of slave stations controls the wavelength of the optical signal output from the laser diode corresponding to the wavelength control signal received in order to suppress the optical beat noise (column 3, lines 8-12).

Regarding claim 13, Tarusawa further teaches that the master station outputs to the plurality of slave stations wavelength control signals to control the wavelength of the laser diode; and Swaminathan and So further teach that the wavelength controller is equipped with a temperature measuring device (Swaminathan fig. 3, 381). The modified system by Tarusawa, Swaminathan and So differs from the claimed invention in that Tarusawa, Swaminathan and So do not specifically teach that the plurality of slave stations transmits (inherently) to the master station the optical signal that also corresponds to the temperature information signal; and the master station is equipped with a temperature information receiver; and the wavelength control signal from the master station is based on output results of the detector and temperature information receiver. However, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to transmit the temperature information of the slave stations to the master station, and configure the master station to send the wavelength control signals based on the temperature information because the temperature information corresponds to the wavelength of the laser diode of the slave station.

Regarding claim 14, Tarusawa further teaches that the plurality of slave stations is each equipped with an antenna (fig. 4, 21), through which the information is received as a radio signal (fig. 4, RFu).

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tarusawa et al. (U.S. Patent US 5,812,296) in view of Swaminathan et al. (U.S. Patent US 5,717,712) and So et al. (U.S. Patent US 5,179,420), and further in view of Domon et al. (U.S. Patent US 5771,111).

Regarding claim 15, the modified system by Tarusawa, Swaminathan and So differs from the claimed invention in that Tarusawa, Swaminathan and So do not specifically teach that the each of the plurality of slave stations is equipped with a frequency converter. However, it is well known in the art to use a frequency converter to convert a signal of one frequency to a different frequency in order to relocate the signal to a desired frequency band. For example, Domon teaches using a frequency converter to convert the frequency of a signal in order to relocate the signal to a desired frequency band (column 6, lines 13-19). Domon further teaches to transfer optical signals using a sub-carrier multiplexing access (column 9, lines 5-18). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to in corporate a frequency converter into a slave station, as it is taught by Domon, and convert the frequency of a signal into a frequency band which is different with each of the plurality of slave stations, and have the optical signal transferred to the master station in optical sub-carrier multiplexing access in order to relocate the signal to a desired frequency band.

Response to Arguments

6. Applicant's arguments with respect to claims 1-2, and 4-15 have been considered but are moot in view of the new ground(s) of rejection.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan-Zhen Wang whose telephone number is (571) 272-3114. The examiner can normally be reached on 8:30 AM - 5:00 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

qzw
6/24/2005

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